D1 cont'd

2. An optical resonator according to claim 1, and whose said reflector elements are at least one full reflector and an output coupler.

C1

3. (Amended) An optical resonator according claim 1, and being a passive optical resonator.

4. An optical resonator according to either of the preceding claims 1 and 2, and being an active optical resonator.

5. An optical resonator according to claim 1, and being the resonator of a laser.

6. An optical resonator according to claim 1, and being the resonator of a ring laser.

7. An optical resonator according to claim 1, and being a stable resonator.

8. An optical resonator according to claim 1, and being an unstable resonator.

9. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element is embodied in a reflector of said optical resonator.

10. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element is embodied in an output coupler of said optical resonator.

D1 cont'd

11. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element is positioned adjacent to an optical element of said optical resonator.

12. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element is placed inside said optical resonator at a defined point which is imaged onto itself from an optical element within the resonator.

13. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element is positioned adjacent to a flat output coupler of said optical resonator, and the full reflector of said resonator is curved.

14. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element also provides at least one of angular, linear and radial phase change.

15. An optical resonator according to claim 1, and also comprising an external discontinuous phase element having at least one sharp discontinuity, operative in addition to said at least one discontinuous phase element disposed between said reflector elements, in order to improve an output beam from said optical resonator.

16. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element is disposed such that said at least one sharp discontinuity falls in a region of low intensity of a desired mode of said resonator.

17. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element changes the phase of predetermined parts of a desired mode of said resonator, such that

generally all parts of the emerging field distribution of said mode are in phase.

D1 Cont'd

18. An optical resonator according to claim 1, and wherein said at least one discontinuous phase element is disposed such that said at least one sharp discontinuity falls in a region of high intensity of at least one undesirable mode of said resonator.

19. An optical resonator according to claim 18, and wherein said at least one discontinuous phase element causes the divergence of said at least one undesirable mode in said resonator to be greater than that of a desired mode, such that propagation of said undesirable mode is decreased.

20. A method of improving an output beam quality of a laser, comprising:

providing a laser resonator having reflector elements and a gain medium; and

disposing at least one static discontinuous phase element between said reflector elements, said at least one static discontinuous phase element having at least one sharp discontinuity adapted to introduce a discontinuous phase change in at least one mode propagating in said laser resonator.

21. The method of claim 20, also comprising the step of selecting said at least one discontinuous phase element such that said laser resonator oscillates in a higher order mode than that obtained without said at least one discontinuous phase element, thereby resulting in an increase of power of said output beam of said laser.

22. The method of claim 21, wherein said higher order mode is a single mode.

D1 cont'd

23. The method of claim 21, wherein said laser is an unstable resonator laser, such that the generation of a higher intensity center spot in said output beam is reduced.

24. The method of claim 21, wherein said laser is a solid state laser.

25. The method of claim 24, wherein said increase of power of said output beam does not limit the dynamic range of said laser.

26. The method of claim 24, wherein said at least one discontinuous phase element is selected such that compensation is provided for birefringence distortion introduced by said gain medium.

27. The method of claim 24, wherein said at least one discontinuous phase element is selected such that thermal lensing in said gain medium is reduced.

28. The method of claim 24, wherein said laser resonator also comprises a non-linear crystal, and wherein said at least one discontinuous phase element is selected and disposed such that the intensity of said resonator mode in said non-linear crystal is generally higher than its intensity in said gain medium.

REMARKS

Attached hereto is a marked-up version of the changes made to the above-identified application by the current amendment. The attached page is captioned "**Version with markings to show changes made**."

The Applicants' local attorneys have requested the undersigned to reply as follow:

The Applicants have carefully studied the outstanding Office